UNITED STATES PATENT AND TRADEMARK OFFICE

NOTICE OF ALLOWANCE AND FEE(S) DUE

128	7590	10/31/2008

HONEYWELL INTERNATIONAL INC.
101 COLUMBIA ROAD
P O BOX 2245
MORRISTOWN, NJ 07962-2245

EXAMINER
LE, JOHN H

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 10/31/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,034	01/28/2004	Kartik B. Ariyur	H0004975-1065	4798

TITLE OF INVENTION: TRENDING SYSTEM AND METHOD USING WINDOW FILTERING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	02/02/2009

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT.
PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS.
THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON
PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE
MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS
STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES
NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS
PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM
WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW
DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current
SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown
above.

B. If the status above is to be removed, check box 5b on Part B -
Fee(s) Transmittal and pay the PUBLICATION FEE (if required)
and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now
claiming SMALL ENTITY status, check box 5a on Part B - Fee(s)
Transmittal and pay the PUBLICATION FEE (if required) and 1/2
the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office
(USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b"
of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a
request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing
the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to
Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of
maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

128   7590   10/31/2008

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

_____ (Depositor's name)
_____ (Signature)
_____ (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,034	01/28/2004	Kartik B. Ariyur	H0004975-1065	4798

TITLE OF INVENTION: TRENDING SYSTEM AND METHOD USING WINDOW FILTERING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	02/02/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
LE, JOHN H	2863	702-190000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____   Date _____

Typed or printed name _____   Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,034	01/28/2004	Kartik B. Ariyur	H0004975-1065	4798

	EXAMINER
	LE, JOHN H

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 714 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 714 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

	Application No.	**Applicant(s)**
Notice of Allowability	10/767,034	ARIYUR ET AL.
	Examiner	**Art Unit**	
	JOHN H. LE	2863	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address*--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to <u>08/14/2008</u>.

2. ☒ The allowed claim(s) is/are <u>3-11, 13, 16-23, 25, 30-38, 40-46</u>.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

      a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

            1. ☐ Certified copies of the priority documents have been received.

            2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

            3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

/John H Le/
Primary Examiner, Art Unit 2863

EXAMINER'S AMENDMENT

Response to Amendment

1.   Applicant's amendment filed 08/14/2008 has been entered and carefully considered.

Claims 18, 21, 32, and 35 have been amended.

Claims 1-2, 12, 14-15, 24, 26-29, and 39 have been cancelled.

Examiner's Amendment

2.   An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

In Claims:

30. (Currently amended) The ~~program product~~ computer readable medium of claim 35 wherein the sliding window filter is adapted to generate the upper confidence bounds and lower confidence bounds through linear regression and statistical inference of the data set.

31. (Currently amended) The ~~program product~~ computer readable medium of claim 30 wherein the sliding window filter is adapted to perform the statistical inference using Student-t statistics.

33. (Currently amended) The ~~program product~~ computer readable medium of claim 32 wherein the trend change detection mechanism is adapted to

compare the first convex hull to the second convex hull by determining if the first convex hull and the second convex hull intersect.

34. (Currently amended) The ~~program product~~ computer readable medium of claim 32 wherein the trend change detection mechanism is adapted to compare the first convex hull and the second convex hull to determine a transition point in the data stream by determining if the first convex hull and the second convex hull intersect, and by iteratively discarding points in the data set and generating a new first convex hull and a new second convex hull until there is no intersection between the new first convex hull and the new second convex hull.

36. (Currently amended) The ~~program product~~ computer readable medium of claim 35 wherein the outlier elimination mechanism is adapted to generate the first prediction cone and the second prediction cone by linear regression of the data points in the left sample window and linear regression of the data points in the right sample window.

37. (Currently amended) The ~~program product~~ computer readable medium of claim 36 wherein the outlier elimination mechanism is adapted to move the left sample window, right sample window, and test window through the data set to remove outliers through out the data set.

38. (Currently amended) The ~~program product~~ computer readable medium of claim 35 wherein file outlier elimination mechanism is adapted to determine outliers by a weighted reciprocal of confidence intervals generated by prediction cones.

40. (Currently amended) The ~~program product~~ computer readable medium
of claim 35 wherein the physical system comprises an aircraft system.

41. (Currently amended) The ~~program product~~ computer readable medium
of claim 32 wherein the physical system comprises an aircraft system.

42. (Currently amended) The ~~program product~~ computer readable medium
of claim 32 wherein the sliding window filter is adapted to generate the upper
confidence bounds and lower confidence bounds through linear regression and
statistical inference of the data set.

Reasons for Allowance

3.   Claims 3-11, 13, 16-23, 25, 30-38, 40-46 are allowed.

The following is a statement of reasons for the indication of allowable
subject matter:

The combination as claimed wherein a trend change detection mechanism
determines a first convex hull for a set of upper confidence bounds and a second
convex hull for a set of lower confidence bounds; the trend change detection
mechanism adapted to compare the first convex hull and the second convex hull
to determine a transition point in the data set; the trend change detection
mechanism adapted to determine an estimated trend of the data set based on
the transition point and the set of upper confidence bounds and the set of lower
confidence bounds (claim 5, claim 18, claim 32) is not disclosed, suggested, or
made obvious by the prior art of record.

The combination as claimed wherein the trending system further
comprises an outlier elimination mechanism, the outlier elimination mechanism

adapted to remove statistical outliers in the data set by generating a first

prediction cone for data points in a left sample window, generating a second

prediction cone for data points in a right sample window, and determining if data

points in a test window reside in the first prediction cone and the second

prediction cone (claim 8, claim 21, claim 35) is not disclosed, suggested, or made

obvious by the prior art of record.

Liu et al. (US 2002/0120416 A1) disclose a trending system comprising: a

trending program; and computer readable medium bearing the trending program

(e.g. [0033]); and wherein: the trending program comprises a sliding window filter

(software for sorting) (e.g. [0038], [0039]); the sliding window filter receives a

data set from a physical system (e.g. clock skew) (e.g. [0033]-[0034]); the data

set comprises a plurality of data points (e.g. [0036]); the sliding window filter

(software for sorting) selects multiple data windows (data network) in the data set

(network data processing system 100 may include additional servers, clients, and

other devices)(e.g. [0022],[0039]), each of the data windows including a subset

plurality of the data points in the data set (e.g. [0037]-[0038]), and with adjacent

windows in the multiple data windows overlap in the data set (e.g., more than

one point in the data set has the same coordinate)[0038]); the sliding window

filter generates lower confidence bounds for each data point using each of the

multiple data windows that includes the data point (e.g. [0038]-[0039]).

Bao et al. (USP 6,996,374) teach a window filter generates upper

confidence bounds and lower confidence bounds (bound data around the select

points along the regression line 619, therefore bound data around the select

point above the regression line is an upper confidence bound and bound data around the select point below the regression line is lower confidence bound) for each data point using each of the multiple data windows that includes the data point (e.g. Fig.6, Col.20, lines 14-35, Col.21, lines 33-55); selects an upper confidence bound and a lower confidence bound for each data point that results in the smallest confidence interval between the upper confidence bounds and lower confidence bounds (The value confidence intervals (CI) essentially indicates how tightly bound the data might be around the selected point) for that data point (e.g. Col.20, lines 14-35); and generate a filtered estimate of the data set (e.g. Col.6, lines 21-26, Col.9, lines 46-65) from the selected upper confidence bounds and lower confidence bounds for each data point (e.g. Fig.6, Col.20, lines 14-35, Col.21, lines 33-55).

However, Liu et al. and Bao et al. do not disclose wherein a trend change detection mechanism determines a first convex hull for a set of upper confidence bounds and a second convex hull for a set of lower confidence bounds; the trend change detection mechanism adapted to compare the first convex hull and the second convex hull to determine a transition point in the data set; the trend change detection mechanism adapted to determine an estimated trend of the data set based on the transition point and the set of upper confidence bounds and the set of lower confidence bounds. Liu et al. and Bao et al. also do not disclose wherein the trending system further comprises an outlier elimination mechanism, the outlier elimination mechanism adapted to remove statistical outliers in the data set by generating a first prediction cone for data points in a

left sample window, generating a second prediction cone for data points in a right

sample window, and determining if data points in a test window reside in the first

prediction cone and the second prediction cone.

Any comments considered necessary by applicant must be submitted no

later than the payment of the issue fee and, to avoid processing delays, should

preferably accompany the issue fee. Such submissions should be clearly labeled

"Comments on Statement of Reasons for Allowance."

Contact Information

4.   Any inquiry concerning this communication or earlier communications from

the examiner should be directed to JOHN H. LE whose telephone number is

(571) 272-2275. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Drew A. Dunn can be reached on (571) 272-2312. The

fax phone number for the organization where this application or proceeding is

assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John H Le/
Primary Examiner, Art Unit 2863
November 4, 2008